

TRR Guest Scientist Lecture / Seminar

Date/Time: 15.07.2021 / 15 o'clock

Location: Online - Zoom

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Microscopy, spectroscopy and OCT with undetected mid-IR photons

Abstract:

The functionality to spectrally image samples in the mid infrared holds the promise significant relevance for biomedical and industrial applications. The principle limitations for real-world adaptation, however, remains one of broadband source and detection, with mid-IR imaging technology being often prohibitively expensive, technically demanding and suffering from poor sensitivity and resolution. This has led to different approaches of side-stepping these roadblocks, for example by frequency conversion to the visible regime, where one can enjoy the comparable maturity of CCD and CMOS technology driven by the life sciences, mobile phone and automotive industry. To further decrease the technological barriers for mid-IR sensing by additionally making broadband mid-IR lasers obsolete and reducing experimental complexity and cost, the experiments in our group follow an approach based on quantum nonlinear interferometry. In my presentation I will elucidate how this can provide a powerful tool for microscopy, spectroscopy and OCT in the mid-IR, based solely on medium power lasers and detection with a standard CMOS or CCD sensor.

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